Section 5

Field Gas Monitoring Techniques

As stated elsewhere in this document, landfill operators are required by regulation, at a minimum, to monitor for methane generation on a quarterly basis. As landfill gas is generated within the landfill, it attempts to migrate in all directions, escaping through the bottom, sides and top surfaces. Accumulation of methane in low-lying areas and man-made structures represents a very real potential for a fire or explosion at that point. Landfill operators may comply with the gas monitoring requirements by any combination of a number of monitoring methods, including (but not limited to):

- Sampling gases from probes located within the confines of the landfill unit, or
- Sampling locations within the leachate collection system;
- Sampling gases from monitoring probes installed in soil between the landfill unit and either the property boundary or on-site structures (where gas is likely to accumulate).

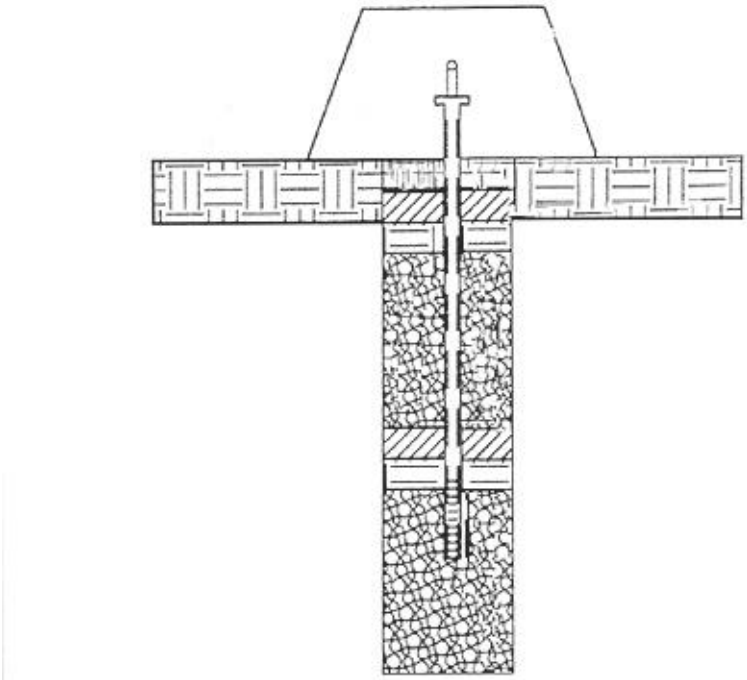
A typical gas monitoring probe installation (also referred to as a landfill gas monitoring well) is depicted in Figure 4. Gas monitoring probes are typically located at the "point of compliance" (generally at the property boundary), and are not usually placed directly within the waste disposal area unless they are specifically being used as a means to collect samples of "as-generated" or "raw" landfill gas.. Probe depths may vary, but are generally based on the depth of the landfill in the vicinity of the probe. Additionally, probes may be either single-depth or multi-depth, with multi-depth probes consist of several probe tubes installed to varying depths with in a single borehole. Typical multi-depth monitoring probe is depicted in Figure 5.

Other methods of testing the gas in the landfill include:

1. A portable methane meter
2. Explosimeter
3. Organic Vapor Analyzer (OVA)

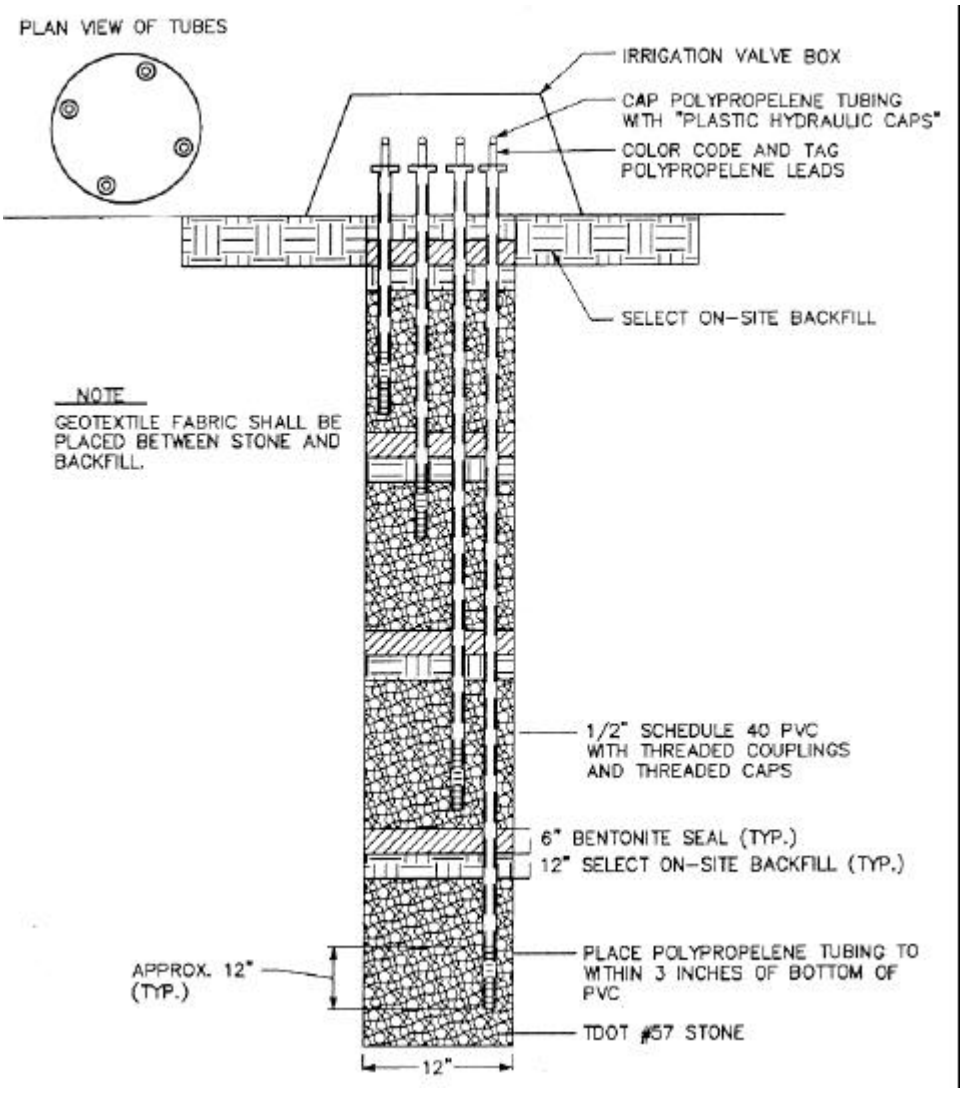
Additionally, gas samples may be collected in glass or metal containers for detailed laboratory analysis using slightly more sophisticated sampling techniques, which are beyond the scope of this document.

Figure 4: Typical Methane Monitoring Well Configuration



One of the simplest landfill gas field testing methods involves the usage of a portable instrument such as a Combustible Gas Indicater (CGI), which is used, to measure the presence and concentration of combustible gases (See Figure 6). What follows is an example demonstrating the use of one such model. The CGI is relatively light, and easy to operate. However, this instrument, like the other instruments in its class, is very sensitive in that proper readings will only occur if the battery is sufficiently charged. Other factors also affect the accuracy of the readings. For example, over- or under- pressurized samples will give erroneous oxygen % readings. Therefore, the instrument oxygen meter should be calibrated for the altitude at which the readings will be taken.

Figure 5: Typical Multi-depth Methane Monitoring Well Configuration



OPERATING PROCEDURES:

1. The instrument should be checked and “zero-ed” in an uncontaminated atmosphere.

2. Check the battery by observing the % LEL meter (it should read at or higher than 80%LEL),the % oxygen meter should be stabilized by using CALIBRATE O_2.

3. The “%LEVEL” meter pointer should be set to O by adjusting the “ZERO LEL” control.

4. Check the instrument for leaks simply by pointing the meter upward (the flow indicator works only when the instrument is in this position).

5. When ready for sampling, place the sampling line or hose at the

point where the sample to be taken.

6. Monitoring results should be logged onto a data sheet similar to that found in Attachment 1.

Figure 6: CGI Positioned to sample at a Manway